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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,577	11/09/2001	Takashi Hiroi	501.40830VX1	5835

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EXAMINER

STREGE, JOHN B

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/986,577

Applicant(s)

HIROI ET AL.

Examiner

John B. Strege

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-30 and 39-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28,39-40,43 is/are allowed.
- 6) ☐ Claim(s) 29,30,41,42 and 44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/25/06</u> . | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

The amendment received 4/13/06 has been entered in full.

Response to Arguments

Applicant's arguments with respect to claims 28-30 have been considered but are moot in view of the new ground(s) of rejection. However, for clarification some comments regarding the arguments are necessary. Specifically the arguments regarding claim 28 are convincing. However, the arguments are directed only to limitations that appear in claim 28, and since these limitations are not in the broader claim 29 (specifically all of the underlined limitations on pages 8-9) then these arguments are irrelevant to claim 29. Furthermore the Applicant's remarks from the foreign representative are also irrelevant as they involve information that is not claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 29-30, 41-42, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gallarda et al. USPN 6,539,106 (hereinafter "Gallarda"), in view of Murase USPN 5,321,767 (cited in a previous action).

Regarding claim 29, Gallarda discloses a pattern inspection apparatus comprising: image detecting means for attaining a digital image of an object substrate on which a pattern is formed through microscopic observation thereof (col. 3 lines 23-

29, and col. 16 lines 27-34 disclose that the test image can be from a scanning-electron-microscope); a display having a screen on which the digital image of the object substrate is displayable (figure 3 numeral 345 discloses a map of the substrate which is a digital image since it is derived from a digital image); an input device for inputting information of a region to be masked on the object substrate (Gallarda discloses a template that extracts features from an image and thus masks all the regions outside of the template); defect detecting means for detecting defects of the pattern formed on said object substrate by comparing the digital image attained by the image detecting means with a reference image (col. 3 lines 19-55 disclose preparing a reference image and a test image, extracting features from the reference image and extracting features from the test image, and comparing features of the reference image and of the test image to identify defects) and output means for outputting data regarding the defects detected by the defect detecting means by masking a region matching related with the image device (figure 3 numeral 345 discloses a display for outputting a defect map, defect location, size, type, etc.). Gallarda discloses using a guided user interface (GUI, figure 3, col. 6 lines 6-9) to carry out the inspection and further that intermediate images and results such as a map of defects and statistics about defect location, size, type, etc. are shown on the display (col. 6 lines 26-35).

Gallarda does not explicitly disclose that the output means outputs data regarding the defects detected by the defect detecting means by masking a region matching with the information inputted by the input device, rather as discussed above. Gallarda discloses that the output means outputs data regarding the defects detected

by the defect detecting means by masking a region related with the information inputted by the input device (the template used by Gallarda does not form the mask, but the area surrounding the template is masked by using the template, thus the template is a type of reverse mask).

It is well known to mask non-critical areas in a semiconductor device. Murase discloses a method forming a mask in an image processing operation for indicating a non-examination region that is to be excluded from the inspection of the appearance of articles (col. 1 lines 8-12, and col. 3 lines 57-60). As seen in figure 6, one possible article of inspection is an integrated circuit 26 (col. 5 lines 46-47). Murase recites that there is a problem in the prior art with inspecting articles when non-critical spots on the article such as printed letters show up as defects, and it is difficult to discriminate between defective parts and the letters (col. 2 line 61 – col. 3 line 10). Murase further recites that such a problem would be overcome by forming a masking region that would conceal the printed letters so as to neglect the data carried by the pixels inside such a mask (col. 3 lines 10-14).

Gallarda and Murase are analogous art because they are from the same field of endeavor of image inspection.

At the time of the invention it would have been obvious to one of ordinary skill in the art to use the teaching of Murase in order to mask the part of the region that matches with the non-critical areas input in the input device. The motivation is that it would reduce the problem of non-critical spots showing up as defects. Thus it would

have been obvious to one of ordinary skill in the art to combine Gallarda and Murase to obtain the invention of claim 29.

Regarding claim 30, Gallarda discloses that the reference image and test image can be obtained using a scanning-electron-microscope (col. 16 line10-34) and a feature template can be used to aid in the feature extraction for a particular type of image can be used to extract the features (col. 17 lines 45-59), thus it is inherent that if the feature template is to be used with a microscopic reference and test images then it must be set up using a microscopic image.

Regarding claim 41, Gallarda discloses a scanning-electron microscope thus it inherently has an electron beam generator which emits an electron beam and a detector to detect the secondary electron emanated from the substrate.

Regarding claim 42, it is obvious that an imaging device must have a light source.

Regarding claim 44, it would be obvious to have a human user select the area of interest thus the examiner declares official notice. The motivation for doing so would allow a technician who is familiar with don't care areas to select them appropriately without the need for processing.

Allowable Subject Matter

Claims 28,39-40, and 43 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: Regarding claim 28, none of the prior art discloses in combination with the other limitations of the claim a pattern inspection apparatus comprising: an input device for

inputting information of a non-inspection region to be masked on the object substrate by defining a region on the screen on which said distribution of defect candidates is displayed in a map from and a defect judging part in which the digital image detected by the image detecting part is examined in a state that a region matching with a condition stored in the memory part is masked and a defect is detected in a region other than said masked region. Thus claim 28 and its dependent claims 39-40, and 42 are allowable over the prior art.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Strege whose telephone number is (571) 272-7457. The examiner can normally be reached on Monday-Friday between the hours of 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JS


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